

United States Military Space: Into the Twenty-First Century

Peter L. Hays

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ABOUT THE AUTHOR: Lieutenant Colonel Peter L. Hays, US Air Force, currently serves as a professor of comparative military studies at the School of Advanced Airpower Studies, Maxwell AFB, Alabama. He leads seminars on air mobility, strategic airpower and national security, defense policy, innovation & security, and space & information power. Colonel Hays is coauthor of “Going Boldly—Where? Aerospace Integration, the Space Commission, and the Air Force’s Vision for Space,” (Aerospace Power Journal, Spring 2001); and is a contributing coeditor of Spacepower for a New Millennium: Space and U.S. National Security (McGraw-Hill, 2000). He previously served as director of INSS, division chief for international relations and defense policy in the department of political science at the USAF Academy, and as a staff augmentee at the White House Office of Science and Technology Policy and the National Space Council. Colonel Hays is a 1979 honor graduate of the USAF Academy, received an MA in Defense and Strategic Studies from the University of Southern California, and holds a PhD in international relations from the Fletcher School of Law and Diplomacy at Tufts University.

Comments pertaining to this paper are invited; please forward to:

Director, USAF Institute for National Security Studies
HQ USAFA/DFES
2354 Fairchild Drive, Suite 5L27
USAF Academy, CO 80840
phone: 719-333-2717
fax: 719-333-2716
email: james.smith@usafa.af.mil

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FOREWORD

We are pleased to publish this forty-second volume in the *Occasional Paper* series of the United States Air Force Institute for National Security Studies (INSS). Lieutenant Colonel Pete Hays, a former Director of INSS, presents two very timely, rigorously researched and documented, and important papers on United States military space. We present them together as representing a range of related issues and imperatives for military space policy and development.

The first paper, “What is Spacepower and Does It Constitute a Revolution in Military Affairs?,” examines the concept of “spacepower” as it is emerging within the United States military and business sectors to establish the basis for military space roles and implications. It also posits military-commercial sector linkages as the best near-term roadmap for future development. As commercial activities expand the importance of United States space, and as technological advances enable military missions, Hays sees expanded military roles, including space weaponization, on the horizon. He concludes that military space has already had significant impact on the “American way of war.” That trend will only continue as the promise of a true space-led revolution in military affairs awaits eventual space weaponization.

Given an increasingly important United States commercial and military presence in space, the second paper, “Space-Related Arms Control and Regulation to 2015: Precedents and Prospects,” presents a detailed analysis of existing regulation and controls that constrain and shape military space use and development. It also presents a comprehensive examination of current and future issues that will define likely arenas of international efforts to further control military space. The United States must be very aware of the possible consequences for our overall commercial and military space efforts in addressing these issues. Finally, the paper suggests areas where some current regulatory emphasis could benefit the United States, indicating areas for current policy emphasis. Together, the two papers provide a timely and important examination of the current state and the likely future of United States military space, and they raise concerns that must be understood and factored into United States policy planning and space development.

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INSS coordinates and focuses outside thinking in various disciplines and across the military services to develop new ideas for defense policy making. To that end, the Institute develops topics, selects researchers from within the military academic community, and administers sponsored research. It also hosts conferences and workshops and facilitates the dissemination of information to a wide range of private and government organizations. INSS provides valuable, cost-effective research to meet the needs of our sponsors. We appreciate your continued interest in INSS and our research products.

About this Publication

This Occasional Paper represents a test publication in cooperation between INSS and the Air University (AU) Press. We hope to solidify long-term cooperation between INSS and the AU Press as it continues to serve USAF-wide interests.

JAMES M. SMITH
Director

WHAT IS SPACEPOWER AND DOES IT CONSTITUTE A REVOLUTION IN MILITARY AFFAIRS?

EXECUTIVE SUMMARY

This paper attempts to answer the first question in its title by examining ways to describe and categorize space activities. It examines the second question by using analogies between previous revolutions in military affairs and spacepower. The paper describes three ways to describe spacepower: 1) space activity sectors (civil, commercial, intelligence, and defense); 2) military space mission areas (space support, force enhancement, space control, and force application); and 3) Lupton's four military space doctrines (sanctuary, survivability, control, and high-ground). It also discusses different ways to view space: as an economic center of gravity and a global utility, in terms of seapower and airpower analogies, as a frontier, and in terms of religious implications and the Overview Effect. The paper uses the revolution in military affairs (RMA) definition developed by the Center for Strategic and Budgetary Assessments and argues that spacepower will not represent a true RMA until space is weaponized. For the near-term, the links between spacepower and the commercial space sector should be studied most carefully because these linkages will point to how the military can best use commercial space assets and also highlight the areas where it will require dedicated military systems. Although space is not an economic center of gravity today, it may emerge as one in the coming decades. It is less clear, however, that traditional "flag follows trade" arguments will lead to an increased military space presence or provide the best way to protect space assets. Looking beyond just economic considerations, there appear to be a growing number of strategic factors that are creating pressure for increased militarization and probably weaponization of space. To date, military space developments have been very important, but they have been more evolutionary than revolutionary. As current political and technological challenges are surmounted, however, it is likely that space—like every other environment humankind has opened—will become weaponized and will emerge as a true RMA.

SPACE-RELATED ARMS CONTROL AND REGULATION TO 2015: PRECEDENTS AND PROSPECTS

EXECUTIVE SUMMARY

This essay discusses the five most important precedents in space-related arms control and regulation in considerable detail: the reconnaissance satellite overflight regime, the communications satellite regulatory regime, the Outer Space Treaty regime, the Anti-Ballistic Missile Treaty regime and space-based defenses, and anti-satellite (ASAT) developments and ASAT arms control. It also outlines the space-related parts of START I and II, the most recent arms control treaties. Finally, the essay discusses five space-related areas that contain significant conflict today and are likely to remain contentious into the future: space weaponization; high-altitude nuclear detonations; high-resolution commercial remote sensing; global utilities; and spectrum crowding, orbital debris, and space traffic control. From the precedents in space arms control three major themes stand out: space is seldom a stand-alone policy consideration, the truisms that “arms are always controlled in a democracy” and “arms control works best when it’s needed least,” and the large number of extreme difficulties for space-related arms control. When examining the contentious areas for space arms control through 2015, the essay finds that there are at least four entrenched camps within the United States—space hawks, inevitable weaponizers, militarization realists, and space doves—and this is likely to make it very difficult for the United States to advance major arms control initiatives on space weaponization for the foreseeable future. Likewise, the United States either faces daunting political and technical challenges or would simply be wise to take a measured approach to arms control or regulation for a number of related issues such as high-resolution commercial remote sensing, global utilities, spectrum crowding, and space traffic control. Opportunities for arms control and regulation in these areas should be studied very carefully, balanced evenly in relation to their costs and benefits for the four space sectors, and weighed against both their opportunity costs and likely unintended consequences. One near-term opportunity for space-related arms control and regulation may be the proposed “spaceworthiness license”—a way to create incentives for the commercial sector to harden satellites against nuclear effects and to minimize orbital debris.